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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,570	01/04/2001	Shunji Baba	1381.1005	2008

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EXAMINER

ROMAN, ANGEL

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 11/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/753,570

Applicant(s)

BABA ET AL.

Examiner

Angel Roman

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-9 and 11-13 is/are rejected.
- 7) ☒ Claim(s) 10 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2812

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 5, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Trevail et al. U.S. Patent 3,924,323.

Trevail et al. discloses a method of supplying an underfill material for a semiconductor chip, comprising; locating a wafer 2 which receives a conductive bump 6 on an upward front side (see figure 1); and transferring an underfill material sheet 18 adhered to a surface of a thin film member 16 onto the upward front side of the wafer 2 (see figure 2). The wafer 2 is reversed and diced (see column 2, lines 39-43) and a resin lamination 24 is formed on a backside of the wafer 2 (see figure 3).

3. Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Higashi et al. U.S. Patent 5,918,113.

Higashi et al. discloses a method of supplying an underfill material 20 for a semiconductor chip, comprising; locating a wafer 50 which receives a conductive bump 54 on an upward front side; and transferring an underfill material sheet 20 adhered to a surface of a thin film member 26 onto the upward front side of the wafer 50 (see figure 10 (c)). The wafer 50 is reversed and diced from a backside (see figure 10(d)).

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Machida et al. U.S. Patent 5,972,780.

Machida et al. discloses a method of supplying an underfill material for a semiconductor chip, comprising; locating a wafer 103 which receives a conductive bump 21 on an upward front side (see figure 3A); transferring an underfill material sheet 20 adhered to a surface of a thin film member 10 onto an upward front side of the wafer 103. The underfill material sheet 20 is urge onto the upward front side of the wafer 103

after softening the underfill material sheet 20 when transferring the underfill material sheet 20 onto the wafer 103 (see figure 3B); and peeling the thin film member 10 from the underfill material sheet 20 after hardening the underfill material sheet 20 (see figure 3C).

5. Claims 7 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohuchi U.S. Patent 6,107,164.

Ohuchi discloses a method of making a semiconductor chip, comprising; adhering an underfill material sheet 23 onto the upward front side of the wafer (see figure 3C); reversing a wafer 10 receiving an conductive bump 5 on an upward front side; and dicing a wafer 10 from a backside of the wafer 10 (see figures 3A-4C).

6. Claims 7, 8, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Glenn et al. U.S. Patent 6,309,943 B1.

Glenn et al. discloses a method of making a semiconductor chip, comprising; adhering an underfill material sheet 632 onto the upward front side of the wafer 310; reversing a wafer 310 receiving an conductive bump 440 on an upward front side; and dicing a wafer 310 from a backside of the wafer 310 (see figure 6). The wafer is irradiated with an electromagnetic wave; and a cutting position on the wafer is determined based on the electromagnetic wave penetrating through the wafer (see figure 4).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 6, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trevail et al. U.S. Patent 3,924,323.

Trevail et al. is applied as above but lacks anticipation on forming the resin lamination on the backside of the wafer by transferring it from a thin film member; forming the resin lamination by an evaporation method. Selecting an optimum resin lamination formation method, e.g. transferring from a thin film member or evaporation, to form the resin lamination in the primary reference of Trevail et al. is only considered

to be routine optimization of the method disclosed by Trevail et al. since Trevail et al. is already forming a resin lamination.

10. Claims 7, 8, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orcutt U.S. Patent 5,904,548.

Orcutt discloses a method of making a semiconductor chip, comprising; adhering an underfill material sheet 29 onto the upward front side of the wafer (see figure 4); reversing a wafer; and dicing a wafer (see column 2, lines 66-67) from a backside of the wafer by irradiating an electromagnetic wave on the wafer; and determining a cutting position on the wafer based on the electromagnetic wave penetrating through the wafer (see Abstract).

Orcutt is applied as above but lacks anticipation on disclosing that the wafer surface front side receives a conductive bump; it would have been obvious to a person having ordinary skills in the art at the time the invention was made to disclose a wafer having a front side surface receiving bumps in the primary reference of Orcutt since chips are known to have conductive bumps on its surfaces.

Allowable Subject Matter

11. Claims 10 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art either singularly or in combination failed to anticipate or render obvious the limitations of cutting out an individual semiconductor chip along the nick with an incision narrower than the nick after formation of the evaporated resin lamination as required by claims 10 and 14.

Conclusion


13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maeda et al. discloses a method of providing an encapsulation film to a semiconductor wafer. Nuyen discloses a method of separating a wafer from a backside using a protective layer on a front side of the wafer. Swiss et al discloses a method of separating package semiconductor devices by using an incision on a back surface. Sawamoto discloses a method for providing a film on a surface of a substrate by softening the film and peeling a sheet from the film prior to contacting the film with the substrate. Silverbrook discloses a method for separating a substrate using adhesive protecting films. Brouillette et al. discloses a method of separating a wafer from a backside by using an electromagnetic wave to align wafer cuts.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

AR
October 31, 2002


John F. Niebling
Supervisory Patent Examiner
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